Answer on Question #38942 – Physics – Other

1. A body changes its velocity from 5m/sec during an accelerated motion of 1m/sec square magnitude and covers a distance of 12 metres in some time. Find the velocity at the end of this time.

$v_1 = 5\frac{m}{s}$ $a = 1\frac{m}{s^2}$ $l = 12\,m$	*Solution.* Let use the correlation between the path of the body which moves with a constant velocity and its initial and final velocities: $l = \frac{v_2^{\,2} - v_1^{\,2}}{2a}$.
$v_2 - ?$	One can find the velocity at the end of the motion: $\boxed{v_2 = \sqrt{2al + v_1^{\,2}}}$.

Let check the dimension.

$$[v_2] = \sqrt{\frac{m}{s^2} \cdot m + \left(\frac{m}{s}\right)^2} = \frac{m}{s}.$$

Let evaluate the quantity.

$$v_2 = \sqrt{2 \cdot 1 \cdot 12 + 5^2} = 7\left(\frac{m}{s}\right).$$

Answer: $7\frac{m}{s}$.